UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,184	11/01/2006	Thomas Hofmann	R.305990	4929

2119 7590 01/28/2009

RONALD E. GREIGG
GREIGG & GREIGG P.L.L.C.
1423 POWHATAN STREET, UNIT ONE
ALEXANDRIA, VA 22314

EXAMINER	
NGUYEN, TU MINH	

ART UNIT	PAPER NUMBER
3748	

MAIL DATE	DELIVERY MODE
01/28/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/573,184	HOFMANN ET AL.	
	Examiner	Art Unit	
	TU M. NGUYEN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Request for Continued Examination (RCE) filed on November 12, 2008 has been entered. Per instruction from the RCE, an enclosed Applicant's Amendment and an Applicant's Amendment filed on September 29, 2008 have also been entered. Claim 13 has been canceled; and claims 14, 15, 17-22, 26, and 31-34 have been amended. Overall, claims 14-34 have been added and are pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 14-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In the currently amended claims 33-34, the amended phrases are new matter, because the phrases "having no components in common with the fuel supply system" do not appear to be described in the original specification and drawings in a way to reasonably explain to one skilled in the art. Figure 1 in the pending application appears to be incomplete because the figure does

not show a safety feature (i.e., an overflow line or blown-off valve), which is required for a pressure reservoir that contains a relatively high pressure urea or ammonia saturated solution. Applicant is required to disclose such safety feature in the design of the pending application because such feature has been claimed to distinguish the application from a prior art of record.

In order to expedite the prosecution process of this present application, the examiner assumes that applicants will correct and delete the new matter issues. The examiner will examine the previously presented subject matters accordingly in this Office Action.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 14-24 and 26-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Peter-Hoblyn et al. (U.S. Patent 5,809,774).

Re claims 33 and 34, as shown in Figure 1, Peter-Hoblyn et al. disclose an internal combustion engine (40) having a fuel supply system (direct fuel injectors (42)), also having an exhaust treatment system for reducing pollutants in the exhaust, the exhaust treatment system comprising:

- a reservoir (10) containing an active ingredient (NOx-reducing reagent),

- a delivery device (23, valve (not numbered but clearly shown on line 32), 30) for delivering the active ingredient, the delivery device is entirely separate from the fuel supply

system (pump (23) pressurizes only a liquid solution of the active ingredient (NOx-reducing agent) for temporary storage in a pressure reservoir (30)), the delivery device including:

- an injection device (valve (not numbered but clearly shown on line 32)) for injecting the active ingredient into the exhaust,

- a pressure reservoir (30) that is fed by the delivery device (23), wherein the pressure reservoir being able to store the active ingredient under pressure and being directly connected to the injection device, and

- at least one of a control and regulating device (control computer (line 66 of column 8)), which at least one of controls and regulates at least one of the pressure in the pressure reservoir as a function of the operating state (engine load) of the internal combustion engine and the time at which the injection of the active ingredient occurs (see lines 37-60 of column 8).

Re claim 14, in the engine of Peter-Hoblyn et al., the delivery device comprises a pre-supply pump (13) and a high pressure pump (23).

Re claims 15-16, in the engine of Peter-Hoblyn et al., the delivery device further comprises a pressure regulating device (valve on line 34) connected to the pressure reservoir (30).

Re claims 17 and 18, in the engine of Peter-Hoblyn et al., the delivery device further comprises at least one of a control and regulating device (control computer (line 66 of column 8)), which at least one of controls and regulates at least one of the delivery capacity of the delivery device, the pressure in the pressure reservoir, the time at which the injection of the active ingredient occurs, and the duration of an injection of the active ingredient as a function of the operating state (engine load) of the internal combustion engine (see lines 37-60 of column 8).

Re claims 19-21, in the engine of Peter-Hoblyn et al., at least one of the delivery device (13, 23) and the pressure reservoir (30) are of the type used in direct-injecting, fuel systems (fuel injectors (42)).

Re claims 22-24, in the engine of Peter-Hoblyn et al., the active ingredient is urea (line 6 of column 7).

Re claims 26-27, Peter-Hoblyn et al. further disclose a method for operating said internal combustion engine, wherein at least one of the delivery capacity of the delivery device, the pressure in the pressure reservoir, the time at which the injection of the active ingredient occurs, and the duration of the injection of the active ingredient depend on the current operating parameters (engine load) of the internal combustion engine (see lines 37-60 of column 8).

Re claim 28, in the method according to Peter-Hoblyn et al., the operating parameters include at least one of a torque of the engine, a temperature (temperature sensor (51)) before a catalytic converter (60), and an NOx content (NOx sensor (45)) in the exhaust.

Re claims 29-32, Peter-Hoblyn et al. further disclose a control unit, a computer program, and an electric storage medium of said internal combustion engine, operable to store said computer program to be used in the claimed method.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peter-Hoblyn et al. as applied to claim 22 above, in view of Goerigk et al. (U.S. Patent Application 2002/0023433).

The engine of Peter-Hoblyn et al. discloses the invention as cited above, however, fails to disclose that the engine further comprises means to heat the pressure reservoir.

As shown in Figure 1, Goerigk et al. disclose a system for feeding a reducing agent into a catalyst device, comprising a urea solution tank (6), a reducing agent pump (7), and an injection valve (8). As indicated in paragraph 0048, Goerigk et al. teach that it is conventional in the art to heat the tank, pump, and valve to prevent freezing of the system. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teachings by Goerigk et al. in the engine of Peter-Hoblyn et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to allow the exhaust system to operate efficiently during period of low temperature.

Response to Arguments

8. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that Peter-Hoblyn et al. fail to disclose or suggest "a pressure reservoir to store the active ingredient under pressure" (pages 9-10 of the Applicant's Amendment), the examiner respectfully disagrees.

Similar to the pending application, Peter-Hoblyn et al. also utilize a pump (23) to pressurize a liquid solution of the active ingredient which is then stored in reservoir (30). Since

the reservoir (30) is adapted to store a pressurized liquid and that this is consistent with a definition provided in the pending application (see paragraph 0027), the reservoir (30) in Peter-Hoblyn et al. is considered to be a "pressure reservoir". Moreover, as illustrated in Figure 1, the liquid solution in the reservoir (30) of Peter-Hoblyn et al. is clearly under high pressure because there is only a valve (32) between the reservoir and the exhaust line (44). There is no pump between the reservoir (30) and the exhaust line (44) to pump the liquid solution out of the reservoir and into the exhaust line.

Furthermore, the surge tank (30) in Peter-Hoblyn et al. is a fluid storage container that stores a fluid in both liquid and gaseous phases with the gas phase on top of the liquid phase. As admitted by applicant (see the last full paragraph of page 9 in an Applicant's Amendment filed on October 29, 2008), if a liquid level in the surge tank in Peter-Hoblyn et al. reaches a threshold value, a "pressure buildup" (presumably by the gas phase that is occupying a lesser volume) becomes critical; and a valve on line (34) is opened to allow an excess NOx-reducing agent to flow to the engine. Since a pump is not used to pressurize the excess NOx-reducing agent to the engine and the force that pushes the liquid phase out of the surge tank is from the gas phase, it should be inherent to applicant that the surge tank (30) in Peter-Hoblyn et al. is a pressure reservoir.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tu M. Nguyen/

TMN

Tu M. Nguyen

January 25, 2009

Primary Examiner

Art Unit 3748